

APPENDIX
ASSESSMENT OF WIND PROFILES AND FALLOUT
PATTERNS FOR BIKINI TESTS

The Bravo and Yankee shots, as previously discussed, both deposited fallout on the islands east of Bikini. In both cases, the lowest reported contour level was not low enough to circumscribe the total fallout deposition. Extrapolation was used to define the 0.1 R/HR (H+1) contour; this level was chosen because it results in an exposure the first year of about 200 mrem, which is about the annual background dose. Shown in Figure 2 is the southern periphery of the Bravo and Yankee patterns relative to the location of the islands.

The other Castle shots are Romeo, Koon and Union; off-site fallout measurements are not available so that their respective wind profiles have to be examined.

The Romeo winds at H+3 and H+9 (DASA 1251) were not measured above 67,000 ft. Below this altitude the dominant direction of the profile is to the north; while not measured for the test, the higher altitude winds are uniformly to the west. Thus it is safe to state that the Romeo fallout did not reach any of the off-site Marshall Islands.

Shot Koon winds were documented for all levels of interest. Except for near-surface, no winds had a northerly component that would have carried any fallout to the south and east. It can be stated with high confidence that Koon fallout carried to the north and east, and did not reach any of the Marshall Islands.

Shot Union presented a rather unique wind problem. Although the lower altitude winds were from the east, strong northerly and westerly components existed from 12,000 to 50,000 feet. The influence of the winds is not readily apparent without further examination. Therefore a crude reconstruction of the fallout pattern was performed by determining the displacement of 50, 100 and 200 μ particles which are initially assumed to be at cloud top and at cloud bottom. This permits the construction of an envelope of all such particles in the

cloud. The H+6 wind profile was used and constant fall rates of .15, .57 and 2.1 m/sec, respectively, were used for the three particle sizes. (Including the altitude dependence of fall rate is probably an over-specification, considering the uncertainty in the spatial variation of the wind). Shown in Figure 3 is this envelope. Taongi is definitely affected by the Union fallout, but the other islands are outside the fallout envelope.

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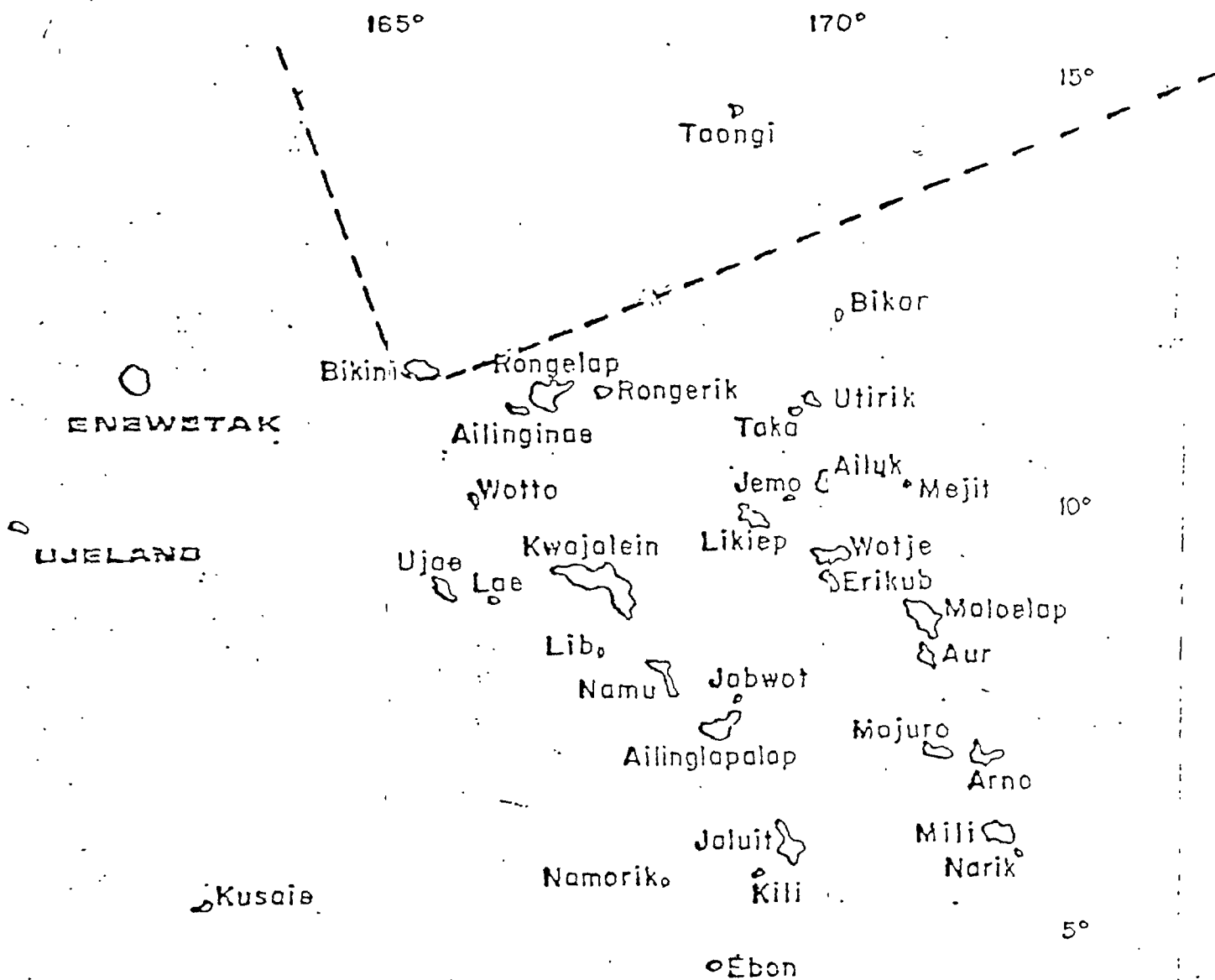


Figure 3. Fallout Envelope for Shot Union.

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